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**IMPROVED TRASH CAN RECEPTACLE**

by  
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## **Background of The Invention**

### **Field of the Invention**

The present invention relates generally to trash receptacles and, more particularly, to such receptacles that are designed to control opening of the top portions thereof with foot control levers and the like. Specifically, the present invention relates to improved trash receptacles wherein the trash bag is more readily accessible and removable without lifting and straining in an upward movement.

### **Description of the Prior Art**

For many years, trash receptacles have been commonly used throughout homes and offices and generally are in the form of a can or receptacle of some type having an open top. Trash bags are frequently placed into the can so as to prevent the actual soilage of the interior of the receptacle. The top is frequently covered to reduce mess and smells, especially when the refuse being placed into the trash receptacle is made up of food stuff. The kitchen trash can oftentimes has a foot pedal to operate the top cover member so that a person can easily open the cover to place trash therein without requiring an available hand.

In the common household trash receptacle as described above, the trash bag is removed through the top of the receptacle when it is full. Unfortunately in our modern times where our waste is ever increasing, such trash cans get quite full before the trash bag is removed. The upward movement required to remove

trash bags from the open top of such a container can require quite a lifting effort, especially if the trash bag has been overfilled. Such lifting can be a problem for certain individuals having bad backs as well as for the elderly and children. Moreover, the act of lifting an overstuffed trash bag through a top opening can cause the bag to catch of the container and rip open.

Numerous efforts have been devised in attempts to overcome these obstacles. U.S. Patent No. 3,162,361 illustrates one such item. Other devices have attempted to design a side door opening through which the bag may be accessed. Examples of such devices are illustrated in U.S. Patents No. 1,157,008, No. 3,332,477, No. 4,923,080, No. 4,955,497, No. 5,901,872, Application No. 2003/0006237 and Design Patent No. D458,431. While these devices certainly are improvements over the simple trash can, they still do not completely obviate the problems outlined above, especially for the household receptacle that must be simple in design and inexpensive in cost. Therefore, there remains a need in the art for a trash receptacle device that overcomes the aforementioned problems, and the present invention addresses and solves these particular problems in the art.

### **Summary of the Invention**

Accordingly, it is one object of the present invention to provide an improved trash receptacle.

It is another object of the present invention to provide a trash receptacle that permits easy top opening access to dispose of trash therein.

Yet another object of the present invention is to provide a trash receptacle that is designed to eliminate upward removal and tearing of the trash bag contained therein at the time of trash disposal.

Still another object of the present invention is to provide a trash receptacle that is particularly helpful to people with bad backs, the elderly, the infirm and children when removing the trash bag contained therein.

To achieve the foregoing and other objects and in accordance with the purpose of the present invention, as embodied and broadly described herein, a trash receptacle is provided and adapted for use with disposable trash bags. The receptacle includes an elongated, substantially vertically-orientated housing having a side body portion defining an interior compartment, a base portion, and an open top portion for providing access to the interior compartment. A pair of adjacent side wall elements extend from the base portion to the top portion and forms part of the side body portion. Each side wall element has first and second vertical side edges, with the first vertical side edge of each side wall element abutting the first vertical side edge of the adjacent side wall element. A plurality of hinge members secure the second vertical side edges of each side wall element to the remainder of the side body portion for outward pivotal movement relative to the interior compartment. The side elements are movable between a closed position for sealing the side body portion around the interior compartment, and an open position for providing selective side access to the interior compartment. A cover element is pivotally secured to the side body portion at the top portion for selective movement between an open position providing access to the interior compartment through the open top portion, and a closed position for sealing the open top portion and interior compartment. A linkage mechanism selectively moves the cover element between its open and closed position as well as the side elements between their open and closed positions to provide selective access to the interior compartment. Finally, an activation apparatus is

provided for operating the linkage mechanism to open and close the cover element and the side elements.

In one modification of the invention, the trash receptacle linkage mechanism includes a first linkage assembly for selectively moving the cover element between an open and closed position, and a second linkage assembly for selectively moving the side elements between an open and a closed position. In one aspect of this modification, the activation apparatus includes first and second control members each being operatively secured, respectively, to the first and second linkage assemblies.

In another modification of the invention, the first and second control members operate independently to separately activate the movement of the cover element and the side elements between their respective open and closed positions. In one application of this, the first control member has two operation positions, the first operation position selectively controlling movement of the cover element between its open and closed positions, and the second operation position selectively activating the second control member. This action by the second operation position in turn controls movement of the side elements between their open and closed positions. Alternatively, each control member is separately operable to independently operate the movement of the cover element and of the side elements between their respective open and closed positions.

In another modification of the above invention, the control members preferably comprise foot pedals. Moreover, the cover element and the side members are spring-loaded to bias them towards their respective closed positions upon inactivation of the appropriate linkage mechanism.

In yet a further application of the invention, the trash receptacle base portion includes an elastomeric seal to prevent soilage from trash contained in the interior compartment. In a particular application of this, the elastomeric seal is removable for cleaning purposes.

In still another modification of the invention, a trash receptacle is provided and includes an elongated, upright enclosure having a side casing defining an interior compartment sized and shaped to receive a disposable trash bag. The side casing further includes a base portion at the lower end thereof, and a top portion defining an opening for providing access to the interior compartment. A pair of adjacent side wall elements extend between the base portion to the top portion and form part of the side casing. Each side wall element has first and second elongated side edges with the first vertical side edge of each side wall element abutting the first vertical side edge of the adjacent side wall element so that they close together. A plurality of hinging members are provided and secure the second vertical side edges of each side wall element to the side casing for outward pivotal movement of the side elements relative to the interior compartment. The side elements are thus movable between a closed position sealing the side casing around the interior compartment, and an open position for providing selective side access to the interior compartment to permit removal of disposable trash bags therein laterally from the enclosure.

A cover element is pivotally secured to the side casing at the top portion for selective movement between an open position providing access to the interior compartment through the top portion opening, and a closed position for sealing the top portion opening. A first linkage assembly is arranged to provide selective movement of the cover element between its open and closed position. A second linkage assembly is also arranged to provide selective movement of the side

elements between their open and closed positions. Finally, an activation apparatus is provided for operating the linkage assemblies to selectively open and close the cover element and the side elements.

A further modification of the invention is in the form of a trash receptacle including an elongated, upright enclosure having a substantially round side casing defining an interior compartment sized and shaped to receive a disposable trash bag. The side casing further includes a substantially round top portion defining an opening for providing access to the interior compartment, and a base portion. An elastomeric seal is disposed along the base portion to prevent soilage from trash contained in the interior compartment. A pair of adjacent side wall elements extend between the base portion to the top portion and comprise a portion of the side casing, each side wall element having first and second vertical side edges. The first vertical side edge of each side wall element abuts the first vertical side edge of the adjacent side wall element. A plurality of hinging members secure the second vertical side edges of each side wall element to the remaining side casing for outward pivotal movement relative to the interior compartment to permit the side elements to move between a closed position sealing the side casing around the interior compartment, and an open position providing selective side access to the interior compartment to permit disposable trash bags therein to be removed laterally from the enclosure.

A cover element is pivotally secured to the side casing at the top portion for selective movement between an open position which provides access to the interior compartment through the top portion opening, and a closed position for sealing the top portion opening. A first linkage assembly is provided to enable selective movement of the cover element between its open and closed position. In addition, a first activation pedal controls the movement of the first linkage

mechanism to selectively open and close the cover element. Likewise, a second linkage assembly is provided to enable selective movement of the side elements between their open and closed positions, and a second activation pedal controls the movement of the second linkage mechanism to selectively open and close the side elements.

### **Brief Description of the Drawings**

The accompanying drawings which are incorporated in and form a part of the specification illustrate preferred embodiments of the present invention and, together with a description, serve to explain the principles of the invention. In the drawings:

Fig. 1 is a front perspective view of a trash receptacle embodiment constructed in accordance with the present invention and in its closed position;

Fig. 2 is a front perspective view of the trash receptacle embodiment of Fig. 1 in a fully open position;

Fig. 3 is a front perspective view of a trash receptacle embodiment similar to that of Fig. 2 but illustrating a first linkage mechanism therein for controlling the movement of the cover member thereof;

Fig. 4 is a front perspective view of a trash receptacle embodiment similar to that of Fig. 3 but illustrating a second linkage mechanism therein for controlling the movement of the side elements thereof;

Fig. 4A is an enlarged side view of the pedal control elements of the embodiment of Figs. 3 and 4;

Fig. 5 is an enlarged, partial top plan view of one embodiment of the second linkage mechanism of the present invention;



Fig. 6 is an enlarged side view of one pedal embodiment of the pedal control element of Fig. 5;

Fig. 7 is a partial side view of the bottom portion of a trash receptacle embodiment constructed in accordance with the present invention and illustrating one embodiment of an elastomeric seal for use along the base portion thereof; and

Fig. 8 is a partial side view of the bottom portion of a trash receptacle embodiment similar to that of Fig. 7 but illustrating an alternate embodiment thereof.

### **Detailed Description of the Exemplary Embodiments**

Referring now to Figs.1-2, a trash receptacle device 10 is illustrated and includes a side casing 12 which forms an outer shell and defines an interior enclosure 14 for receiving trash, preferably in the form of a trash bag 16 having an upper opening 18. The device 10 further includes an a top portion in the form of an upper opening 20 through which trash is deposited into the trash bag 16. A cover element 22 is positioned to selectively seal the opening 20 as described below. The device 10 also includes a bottom portion 24.

A pair of side elements 26, 28 are provided and form a portion of the side casing 12. The side elements 26, 28 preferably extend from the bottom portion 24 to the top portion 20 and form a pair of side doors. The side door elements 26, 28 are each secured along a vertical side edge 30, 32, respectively, to the side casing 12 by a plurality of hinge members 34. Their other vertical side edges 36, 38 are formed to abut each other when the side elements doors 26, 28 are in their closed position as illustrated in Fig. 1. The cover element 22 is likewise secured to the top portion 20 by a hinge 40.

In this manner, the cover element 22 and the side door elements 26, 28 can be in their closed positions to seal the trash bag within the enclosure 14. Moreover, the cover element 22 and the side door elements 26, 28 can be in their open positions as illustrated in Fig. 2 which provide easy access to the trash bag 16. Operation of these cover and side elements may be controlled by a single foot pedal 41 or as illustrated and discussed below. As a result of this arrangement, the trash bag 16 may be removed by simply pulling in or out laterally from the enclosure 14. Prior designs typically require that the bag be lifted out of the top opening 20. This causes a substantial lift effort, which may be too much for certain people such as the elderly, those with bad backs, children, and the like. Moreover, such upward lifting can cause a vacuum in the bottom portion 24 of typical trash receptacles, which vacuum requires even greater effort and can rip the bag open. The present invention obviates this by allowing full lateral access to the bag within the enclosure 14 as illustrated and explained in Fig. 2.

The operation of opening and closing the cover element 22 and the side elements 26, 28 may be performed in a variety of manners. Referring to Figs. 1-6, the cover element 22 is preferably operated by a first linkage mechanism 42, while the side elements 26, 28 are preferably operated by a separate linkage mechanism 44. While specific exemplary linkage mechanisms 42, 44 are illustrated and explained herein, it should be understood that any appropriate type of mechanical, electronic or combinations thereof, linkage and operating mechanisms may be utilized with the present invention.

The first linkage mechanism 42 in one preferred form includes a first control pedal 46. The control pedal 46 is attached to a bottom rod which in turn is attached to a vertical rod 50. By pressing on the pedal 46, the bottom rod 48 moves laterally into the bottom portion 24 which in turn pushes the vertical rod 50

in an upward direction. The vertical rod 50 is attached to a bracket 52 disposed on the inner surface 54 of the cover element 22. Upward movement of the rod 50 is translated to an upward force against the cover element 22 and moves the cover element 22 into its open position. Once the pedal 46 is released, the weight of the cover element 22 returns the rods 48, 50 and the pedal 46 to their initial starting position.

The second linkage mechanism 46 controls the movement of the side door elements 26, 28. The second linkage mechanism 46 may be operated by the same pedal 46 as the first linkage mechanism 42 or by a separate pedal. The separate pedal may be in the form of a pedal 56 that is operatively connected to the first pedal 46 or it may be an entirely separate pedal member 58. In the embodiment wherein the pedal 56 is operatively connected to the pedal 46, the pedal 46 is larger than and is positioned beneath the pedal 56 as illustrated in Fig. 4A. When the pedal 46 is depressed, it operates only the first linkage mechanism 42. When the second pedal 56 is depressed, it operates the second linkage mechanism 44 and simultaneously depresses the first pedal 46 to activate the first linkage mechanism 42.

The second linkage mechanism 46 may be in the form of a gearing arrangement wherein a reciprocating element 60 in the preferred form of a worm gear member is operatively attached to the pedal 58 by way of one or more beveled springs 62. When the pedal 58 is depressed, this action compresses the springs 62 which in turn moves the element 60 laterally into the bottom portion 25. At the distal end of the element 60 is a return spring member mounted against a plate 66. When the element 60 is moved laterally by depressing the pedal 58, the return spring 64 is compressed, which in turn moves the element 60 to its starting position once the pedal 58 is no longer depressed. Worm gear

teeth 68 interact with teeth 70 of a first gear member 72 to rotate the gear member 72 in a first direction. A second gear member 74 includes gear teeth 76 that interact with the teeth 70 to rotate the second gear 74 in an opposite direction. The rotation of the second gear member 74 moves a control rod 78 that is attached to the side door element 28 to move it into an open position. As the reciprocating element 60 returns to its initial position by releasing pressure on the pedal 58, the gears 72 and 74 are rotated in an opposite direction to move the side door element 28 to a closed position through movement of the control rod 78. This arrangement is repeated on both side of the reciprocating worm gear 60 as illustrated in Fig. 4.

As a result of the above arrangements, the cover element 22 may be opened by itself to place trash into the trash bag 16 within the enclosure 14 through the open top portion 20. When it is desired to open the trash receptacle device 10 to remove the trash bag 16 and replace it with an empty one, both the cover element 22 and the side door elements 26, 28 are opened fully to easily remove the bag 16 laterally through the opening created in the side casing 12 of the device 10 by these open elements 22, 26 and 28.

In one preferred embodiment of the invention, the trash receptacle device 10 also preferably includes an elastomeric seal 80 at the bottom portion 24 to prevent soilage from trash contained or spilled in the interior compartment 14. The seal 80 illustrated in Fig. 7 is positioned outside the side casing 12, while the seal 82 as illustrated in Fig. 8 is positioned inside the side casing 12 at the bottom portion 24. In either for, the seal 80, 82 is removable for washing.

As can be seen from the above, the present invention provides an inexpensive and simple approach to the problem of trash removal from a trash receptacle. As a result of the present invention, a trash bag may be removed

from the receptacle by simply pulling it out laterally from the enclosure since the side is opened up along with the top. Prior designs typically require that the bag be lifted out of the top opening. This can cause a substantial lift effort, which may be too much for certain people such as the elderly, those with bad backs, children, and the like. Moreover, such upward lifting can also create a vacuum in the bottom portion of typical trash receptacles. Such vacuum typically requires even greater effort to remove the trash bag and can frequently rip the bag open as a result of such effort. The present invention obviates these problems by allowing full lateral access to the bag within the receptacle enclosure. This is especially true when the bag has been overfilled, a common occurrence. Such overfilling oftentimes prevents simple upward removal of the trash bag unless some of the trash is removed from the bag! The present invention overcomes this problem.

The foregoing description and the illustrative embodiments of the present invention have been described in detail in varying modifications and alternate embodiments. It should be understood, however, that the foregoing description of the present invention is exemplary only, and that the scope of the present invention is to be limited to the claims as interpreted in view of the prior art. Moreover, the invention illustratively disclosed herein suitably may be practiced in the absence of any element which is not specifically disclosed herein.